

Title: Robust and Efficient Fitting of Severity Models and the Method of Winsorized Moments

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Abstract:

In this talk, we will present a new method---the method of Winsorized moments (MWM)---for estimation of the parameters of claim severity models. This method is conceptually similar to the method of trimmed moments (MTM) and thus is robust and computationally efficient. Both approaches yield explicit formulas of parameter estimators for log-location-scale families and their variants, which are commonly used to model claim severity. Large-sample properties of the new estimators are provided and corroborated through simulations. Their performance is also compared to that of MTM and the maximum likelihood estimators (MLE). In addition, the effect of model choice and parameter estimation method on risk pricing is illustrated using actual data that represent hurricane damages in the United States from 1925 to 1995. In particular, the estimated pure premiums for an insurance layer are computed when the lognormal and log-logistic models are fitted to the data using the MWM, MTM, and MLE methods.